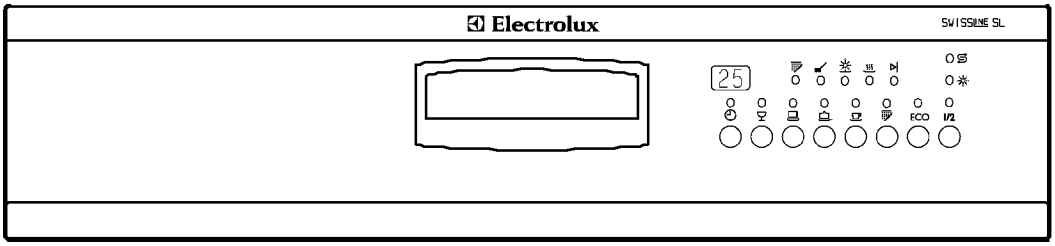
Electrolux

Technical Support Europe

SERVICE MANUAL

DISHWASHER



Dishwasher

GS 24 CH

© AEG Hausgeräte GmbH
Muggenhofer Straße 135
D-90429 Nürnberg
Germany

Fax +49 (0)911 323 1420

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Contents

1. Survey of electronics used in this series 3
   Comfort level L3 / Li.3 3
   Comfort level GL.3 / Gli.3 3
   Comfort level SL.3 / Sli.3 4

2. Mechanical Construction 4

3. Comparison with front sides of DW 23 generation 5
   Comfort levels L.1 / Li.1 / GSA.2 / GSIA.2 5
   Comfort levels GL.1 / Gli.1 / GSB.2 / GSIB.2 5
   Comfort levels SL.1 / Sli.1 / GSG.2 / GSIG.2 5

4. Construction (technical) and new functions 6
   2- and 5-key electronic 6
   Function of touch-sensitive field? 6
   8-sensor electronic 6

5. Error codes 7
   Comfort level L.3 / Li.3 7
   Comfort level GL.3 / Gli.3 7
   Comfort level SL.3 / Sli.3 ..... 7 - 8

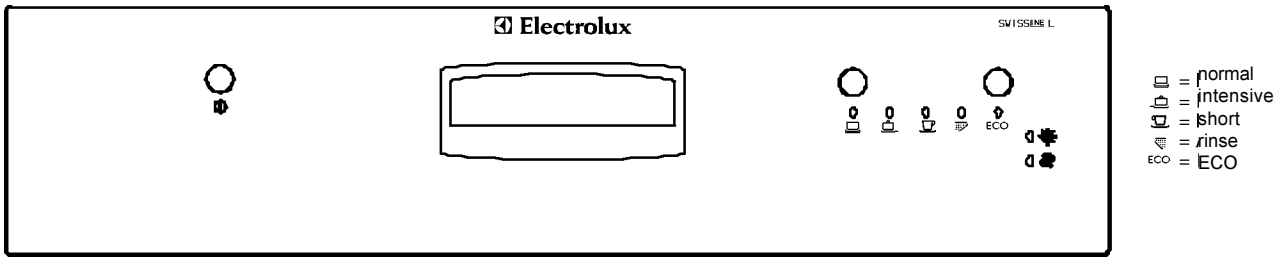
6. Test routine carousel 9
   Sequence test routine carousel 9

7. Test routine computer ..... 10 - 17

1. Survey of Electronics Used in this Series

Comfort level L.3 / Li.3

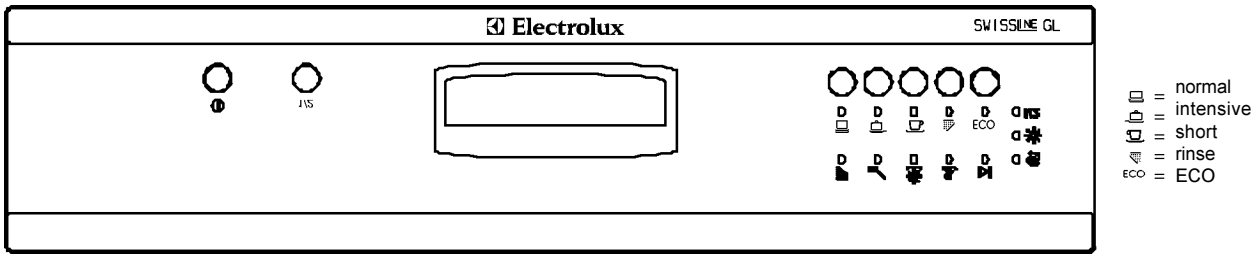
2-keys electronic / no. 153 0259-08/2



Internal name: TES 502 / 153 0964 00
2 red LEDs (salt and rinse-aid)
5 green LEDs for all cycles and ECO
no indication of program status
4 programs: NORMAL / INTENSIVE / SHORT / PRE-WASH
1 additional function: ECO
2 integrated test routines

Comfort level GL.3 / Gli.3

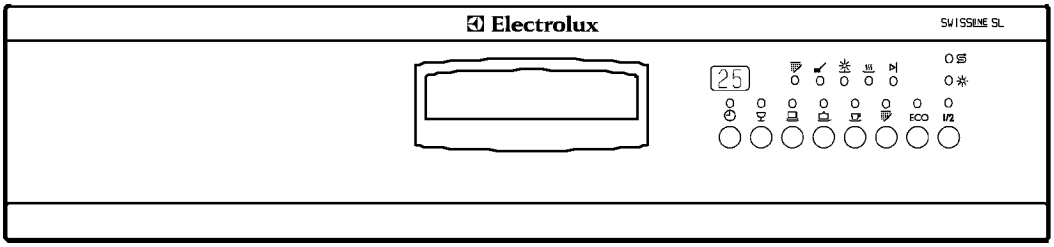
5-keys electronic / no. 153 0259-05/8



Internal name: TES 401 / 153 0842 00
2 red LEDs (salt and rinse-aid)
6 green LEDs for all cycles, ECO and HALF LOAD
5 yellow LEDs as indication of program status
4 programs: NORMAL / INTENSIVE / SHORTt / PRE-WASH
2 additional functions: ECO / half load
2 integrated test routines

Comfort level SL.3 / Sli.3

8-sensors electronic / no. 153 0259-09/0



Internal name: TES 505 / 153 0894 00
2 red LEDs (salt and rinse-aid)
8 green LEDs for all cycles, ECO, stop and timer
5 yellow LEDs as indication of program status
2 7-segment displays for start delay and remaining wash time
5 programs: GLASS / NORMAL / INTENSIVE / SHORT / PRE-WASH
3 additional functions: ECO / half load / start delay
2 integrated test routines

Important note

All electronics supplied under DW 24 have already been equipped with the latest software version F. This was introduced to avoid that the same wash cycles under series DW 23 and DW 24 show different indices.

2. Mechanical Construction

Lowest comfort level:
Support panel made of plastic, design panel of steel, lacquered or stainless steel.
The design panel is interlocked with the support panel.

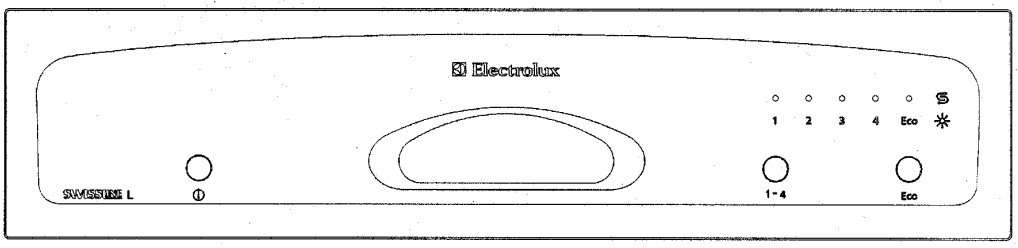
Medium comfort level:
Support panel made of plastic, design panel of glass, ornamental stripes of steel, lacquered or stainless steel, ornamental rings surrounding all keys.
All components are glued with each other, the ornamental rings are snapped into the glass.

Highest comfort level:
Support panel made of plastic, design panel with sensor electronic on the back side made of glass, ornamental stripes of steel, lacquered or stainless steel.
All components are glued with each other.

3. Comparison with Front Sides of DW 23 Generation

Comfort levels L.1 / Li.1 / GSA.2 / GSIA.2

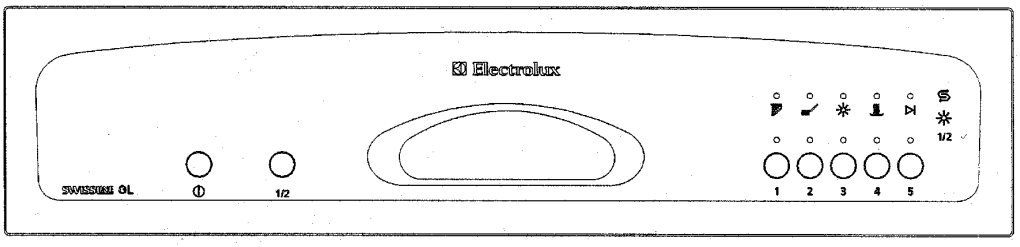
2-keys electronic / no. 153 0259-04/1



1 = normal
2 = intensive
3 = short
4 = rinse

Comfort levels GL.1 / Gli.1 / GSB.2 / GSIB.2

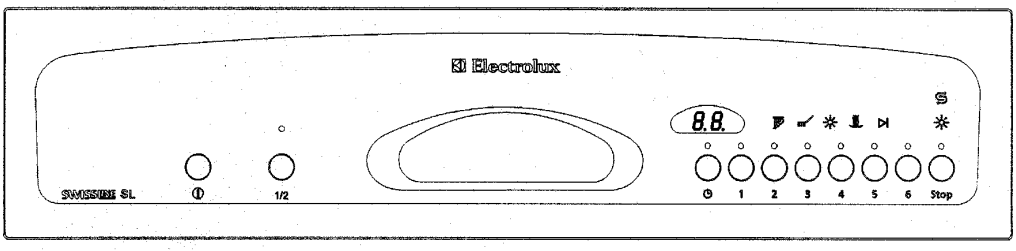
5-keys electronic / no. 153 0259-05/8



1 = normal
2 = intensive
3 = short
4 = rinse
5 = ECO

Comfort levels Sl.1 / Sli.1 / GSG.2 / GSIG.2

8-keys electronic / no. 153 0259-06/6



1 = glass
2 = normal
3 = intensive
4 = short
5 = rinse
6 = ECO

4. Construction (Technical) and New Functions

2- and 5-keys electronic

- Electronic derived from the DW 23 series
- All keys / switches can be operated from the front
- Snapped-in housing
- One-board solution in SMD technology
- Light guides between LED display and housing upper side, snapped in the housing from the front
- Mechanical rams, integrated in the housing lid, to submit the input orders
- Key caps pushed on new standard rubber keyboard
- High-impedance signal inputs
- Electrical network inputs secured by VDR
- All loads selected by TRIAC
- Pump capacity limited to 120VA by fixed phase angle (half load and AAA)
- Temperature range 0 to 60 °C
- Moisture range 35 to 85 rel%

8-sensors electronic

- Derived from the 8- and 7-keys electronic of the DW 23 series
- Main switch can be operated from the top in the panel
- Snapped-in housing
- Two-board solution in conventional technology (wired elements)
- LED directly through the housing surface
- Touch-sensitive fields with ground-in finger guidance in the glass
- High-impedance signal inputs
- Electrical network inputs secured by VDR
- All loads selected by TRIAC
- Pump capacity limited to 120VA by fixed phase angle (half load and AAA)
- Temperature range 0 to 60 °C
- Moisture range 35 to 85 rel%

Function of Touch-Sensitive Field

With the 8-sensors electronic, a second electronic which is glued on the reverse side of the glass takes on the function of the mechanical keys. Any touch-sensitive field produces a fine, very close-restricted and constant electrical field. By approaching with a finger (or with a corresponding object) the field is reduced. This reduction is recognized by the sensor electronic and interpreted correspondingly.The connection between the sensor and the existing electronic is mady by a 10-poles low-voltage cable within the panel.
The sensor electronic is set up very simply and insensitive to faults from the outside, but in case of a fault it can be exchanged only together with the panel because it is glued
For the survey we talk in the following only about keys, even though the sensors are meant with the highest comfort level.

The functions **half load** and **normal + ECO (AAA)** have been taken over without any changes from the existing DW 23 series as well as the existing test routines.

5. Error Codes

The electronic is able to detect and represent possible errors independently. Corresponding error displays will flash at least twice as fast as with the normal entry.

Comfort level L.3 / Li.3

2-keys electronic / no. 153 0259-08/2

One of the green program LEDs flashes **fast** according to the list. A total of 5 errors is displayed.

Comfort level GL.3 / Gli.3

5-keys electronic / no. 153 0259-05/8

The yellow LED **END** flashes together with one of the green program LEDs according to the list. A total of 5 errors is displayed.

Comfort level SL.3 / Sli.3

8-keys electronic / no. 153 0259-09/0

A letter appears in the display and the yellow LED **END** flashes together with one of the green program LEDs according to the list. A total of 6 errors is displayed.

Code **A** and/or LED **END** and/or **NORMAL** is/are flashing:

- Maximum filling time of 105 sec exceeded, before the working level has been reached.

Possible errors: tap closed
inlet valve without function or clogged
level switch faulty (interruption)

Code **C** and/or LED **END** and/or **INTENSIVE** is/are flashing:

- Maximum drain time of 120 sec (20 sec in level 2) exceeded, without that the reset level has been reached.

Possible errors: drain pump faulty / jammed
drain hose or sieve clogged
level switch faulty (short circuit)

Code **E** and/or LED **END** and/or **SHORT** is/are flashing:

- Maximum refilling time of 45 sec or maximum allowed number of 3 refillings exceeded.

Possible errors: inlet hose allows too less water,
sieve clogged
water pressure too low, water tap or
regenerating dosage (inlet bow) calcified
appliance is losing water

Code **H** and/or LED **END** and/or **RINSE** is/are flashing:

- Maximum heating time of 45 min exceeded without reaching the working temperature.

Possible errors: heating defective
heating relais without function
80°C thermostat switches too early or
irregularly

Code **L** and/or LED **END** and/or **ECO** is/are flashing:

- Short circuit or interruption with the NTC temperature sensor.

Possible errors: NTC temperature sensor faulty
connection dropped off

Code **E2** (appears only on the 8-keys electronic for 2 sec after actuating the main switch):

- Appliance will lose saved values in case of a power failure or when pressing the mains switch.

Error: E2PROM in electronic is faulty.

This error has no influence on the function of the dishwasher.

Note:

Both old error messages **P** and **U** are no longer considered in these controls. P (short circuit level switch) was newly integrated in message **C**.
U (pump/cond interruption or short circuit) is dropped as a power monitoring is not possible because of the phase-angle control.

6. Test Routine Carousel

Application: This test routine was developed for the test carousel in the factory. Only the components inlet valve, recirculation pump, heating and drain pump are selected.

Start: switch off the main switch
close the door
For the following controls, these key combinations are valid:
press and keep pressed
2 keys / no. 153 0259-08/2: ECO (LED **ECO** and **RINSE**)
5 keys / no. 153 0259-05/8: **ECO** and **RINSE** together
8 keys / no. 153 0259-09/0: **HALF LOAD** and **ECO** together
switch on the main switch
keep the key(s) pressed for at least 5 sec (corresponding LEDs flashing during this time)
The display shows the lower circle of digit 8 and/or the corresponding LEDs will flash permanently
the program starts

Stop (main switch): If the program is stopped by the main switch it is possible to select a wash program immediately after switching on again.
If the test routine is started anew after this stop – as described under start – the program goes directly into step 5 and first pumps the water from the tub (corresponding LEDs flashing at the end).
Now the test routine can be started anew – as described under start.

Sequence: See enclosed flowchart.

6.1 Sequence Test Routine Carousel

STEP		Duration	All LEDs on	FILLING	DRAIN	CIRCULATION	HEATING + level 1	Detergent/rinse-aid	REGENERATION	Action
1		3 sec								Check whether all LEDs are functioning
2		75 sec								Fixed filling time of 75 sec
3		Open								If level 1 switches on, heating until water temperature has reached 60°C, otherwise circulation only for 120 sec (without heating)
4		20 sec								Pause, LEDs are flashing
5		45 sec								Fixed drain time, DW is drained

7. Test Routine Computer

Application: **This test routine was developed for the test stand in the factory and can also be used in the field (advantageously together with a transparent door). All electrical components in the appliance are selected.**

Start: switch off the main switch
close the door
For the following controls, these key combinations are valid:
press and keep pressed
2 keys / no. 153 0259-08/2: program selection (LEDs **ECO** and **INTENSIVE**)
5 keys / no. 153 0259-05/8: **ECO** and **INTENSIVE**
8 keys / no. 153 0259-09/0: **HALF LOAD** and **SHORT** together
switch on the main switch
keep the key(s) pressed for at least 5 sec (corresponding LEDs flashing during this time)
The display shows the lower circle of digit 8 and/or the corresponding LEDs will flash permanently

Stop (main switch): If the program is stopped by the main switch it is possible to select a wash program immediately after switching on again.
If the test routine is started anew after this stop – as described under start – the cycle goes directly into step 9 and first pumps the water from the tub (corresponding LED flashing at the end).
Now the test routine can be started anew – as described under start.

Sequence: See enclosed flowchart.

7.1. Sequence Test Routine Computer

STEP		Duration		All LEDs on	FILLING	DRAIN	CIRCULATION	HEATING + level 1	Detergent/rinse-aid	REGENERATION	Action
1		3 sec									Check whether all LEDs are functioning (without 7-segment display)
2		5 sec									Heats only if level 1 is switched on, else pause for 5 sec
3		60 sec									Fixed filling time of 60 sec
4		20 sec									Measurement of spray arms (rotational speed) and combined proportioning device
5		5 sec									Measurement of regenerating valve
6		5 sec									Measurement of recirculation pump and of heating, if level 1 is switched on
7		90 sec									Overfilling with max. 90 sec
8											Test rig: drain pump starts at LEV 2, external mains voltage is switched off, keys keep to be pressed or manual operation: jumps from step 7 directly to step 9
9		50 sec									Fixed drain time, DW is drained

8. All Wash Programs

8.1 Glass Program (Ver F)

STEP	FILLING	DRAIN	WASHING	HEATING	CPD*	REGENERATION	DRYING	GLASS	DISPLAY	GLASS + ECO	DISPLAY	GLASS + ½	DISPLAY	NOTE
1	■							15"	59	15"	48	15"	46	<P1>
2		■						20"	59	20"	48	20"	46	CP0
3	■							VL	58	VL	47	VLA	45	
4			■					-	-	-	-	-	-	
5			■	■				-	-	-	-	-	-	
6			■					-	-	-	-	-	-	
7		■						-	-	-	-	-	-	
8		■						-	-	-	-	-	-	
9	■							-	-	-	-	-	-	
10						■		-	-	-	-	-	-	
11					■			5"	57	5"	46	5"	44	ARD
12			■					60"	56	60"	46	60"	44	P,R
13			■	■				43° oder 11'	55	38° oder 9'	45	38° oder 7'	43	P,C,M
14			■					240"	44	240"	36	240"	36	P,M
15		■						P0	40	P0	32	P0	32	
16		■						10"	40	10"	32	10"	32	CP0
17	■							VL	39	VL	31	<VL	31	
18			■					120"	37	120"	30	120"	30	P,R,M
19		■						P0	35	P0	28	P0	28	
20		■						10"	35	10"	28	10"	28	CP0
21	■							VL	34	VL	27	<VL	27	
22			■	■				52°	33	47°	26	47°	26	P,R,M
23			■		■			30"	20	30"	19	30"	17	P,R
24			■					5"	20	5"	19	5"	17	P,R
25			■		■			25"	20	25"	19	25"	17	P,R
26			■	■				62°	19	57°	18	57°	16	P,R,M
27						■		120"	13	120"	13	120"	13	M
28		■				■		P0	11	P0	11	P0	11	
29		■				■		10"	11	10	11	10	11	
30							■	600"	10	600"	10	600"	10	M
31		■						10"	1	10"	1	10"	1	

* CPD = combined proportioning device

8.2 Normal Program (Ver F)

STEP	FILLING	DRAIN	WASHING	HEATING	CPD*	REGENERATION	DRYING	NORMAL	DISPLAY	NORMAL + ECO	DISPLAY	NORMAL + ½	DISPLAY	NOTE
1	■							15"	70	15"	2.5	-	-	<P1>
2		■						20"	70	20"	2.5	-	-	CP0
3	■							VL	69	VL	2.5	VLA	64	
4			■					300"	68	600"	2.5	300"	63	P,R,M
5			■	■				-	-	-	-	-	-	
6			■					-	-	-	-	-	-	
7		■						P0	63	P0	2.4	P0	58	
8		■						10"	63	10"	2.4	10"	58	CP0
9	■							VL	62	VLB	2.4	<VL	57	
10						■		-	-	-	-	-	-	
11					■			5"	61	5"	2.4	5"	56	ARD
12			■					60"	61	60"	2.4	60"	56	P,R
13			■	■				47° oder 12'	60	t=47°	2.4	47° oder 11'	55	P,C,M
14			■					600"	48	T-t	2.3	600"	44	P,M
15		■						P0	38	P0	87	P0	34	
16		■						10"	38	10"	87	10"	34	CP0
17	■							VL	37	VLA	86	<VL	33	
18			■					180"	36	300"	85	180"	32	P,PA,R,M
19		■						P0	34	P0	80	P0	29	
20		■						10"	34	10"	80	10"	29	CP0
21	■							VL	33	VLX	79	<VL	28	
22			■	■				57°	32	52°	78	52°	27	P,PA,R,M
23			■		■			30"	20	30"	69	30"	19	P,PA,R
24			■					5"	20	5"	69	5"	19	P,PA,R
25			■		■			25"	20	25"	69	25"	19	P,PA,R
26			■	■				65°	19	62°	68	62°	18	P,PA,R,M
27						■		120"	13	120"	63	120"	13	M
28		■				■		P0	11	P0	61	P0	11	
29		■				■		10"	11	10"	61	10"	11	
30							■	600"	10	3600"	60	600"	10	M
31		■						10"	1	10"	1	10"	1	

* CPD = combined proportioning device

8.3 Intensive Program (Ver F)

STEP	FILLING	DRAIN	WASHING	HEATING	CPD*	REGENERATION	DRYING	INTENSIVE	DISPLAY	INTENSIVE + ECO	DISPLAY	INTENSIVE + ½	DISPLAY	NOTE
1	■							15"	86	15"	81	15"	75	<P1>
2		■						20"	86	20"	81	20"	75	CP0
3	■							VL	85	VL	80	VLA	74	
4			■					60"	83	60"	78	60"	73	P,R
5			■	■				45° oder 8'	82	40° oder 8'	77	40° oder 8'	72	P,C,M
6			■					120"	74	120"	69	120"	64	P,M
7		■						P0	72	P0	67	P0	62	
8		■						10"	72	10"	67	10"	62	CP0
9	■							VL	71	VL	66	<VL	61	
10						■		-	-	-	-	-	-	
11					■			5"	71	5"	66	5"	61	ARD
12			■					60"	69	60"	65	60"	60	P,R
13			■	■				65° oder 15'	68	60° oder 13'	64	60° oder 12'	59	P,C,M
14			■					780"	53	780"	51	780"	47	P,M
15		■						P0	40	P0	38	P0	34	
16		■						10"	40	10"	38	10"	34	CP0
17	■							VL	39	VL	37	<VL	33	
18			■					180"	37	180"	35	180"	32	P,R,M
19		■						P0	35	P0	33	P0	29	
20		■						10"	35	10"	33	10"	29	CP0
21	■							VL	34	VL	32	<VL	28	
22			■	■				60°	32	55°	30	55°	27	P,R,M
23			■		■			30"	21	30"	20	30"	19	P,R
24			■					5"	21	5"	20	5"	19	P,R
25			■		■			25"	21	25"	20	25"	19	P,R
26			■	■				70°	20	65°	19	65°	18	P,R,M
27						■		120"	13	120"	13	120"	13	M
28		■				■		P0	11	P0	11	P0	11	
29		■				■		10"	11	10	11	10	11	
30							■	600"	10	600"	10	600"	10	M
31		■						10"	1	10"	1	10"	1	

8.4 Short Program (Ver F)

STEP	FILLING	DRAIN	WASHING	HEATING	CPD*	REGENERATION	DRYING	SHORT	DISPLAY	SHORT + ECO	DISPLAY	SHORT + ½	DISPLAY	NOTE
1	■							15"	42	15"	36	15"	32	<P1>
2		■						20"	42	20"	36	20"	32	CP0
3	■							VL	41	VL	35	VLA	32	
4			■					-		-		-		
5			■	■				-		-		-		
6			■					-		-		-		
7		■						-		-		-		
8		■						-		-		-		
9	■							-		-		-		
10						■		-		-		-		
11					■			5"	40	5"	34	5"	31	ARD
12			■					60"	40	60"	34	60"	31	P,R
13			■	■				43° oder 9'	39	38° oder 7'	33	38° oder 6'	30	P,C,M
14			■					120"	30	120"	26	120"	24	P,M
15		■						P0	28	P0	24	P0	22	
16		■						10"	28	10"	24	10"	22	CP0
17	■							VL	27	VL	23	<VL	22	
18			■					60"	26	60"	22	60"	21	P,R
19		■						P0	25	P0	21	P0	20	
20		■						10"	25	10"	21	10"	20	CP0
21	■							VL	24	VL	20	<VL	20	
22			■	■				57°	23	52°	19	52°	19	P,R,M
23			■		■			30"	9	30"	9	30"	9	P,R
24			■					5"	9	5"	9	5"	9	P,R
25			■		■			25"	9	25"	9	25"	9	P,R
26			■	■				62°	8	57°	8	57°	8	P,R,M
27						■		120"	5	120"	5	120"	5	M
28		■				■		P0	3	P0	3	P0	3	
29		■				■		10"	3	10"	3	10"	3	
30							■	120"	2	120"	2	120"	2	M
31		■						10"	1	10"	1	10"	1	

8.5 Rinsing (Ver F)

STEP	FILLING	DRAIN	WASHING	HEATING	CPD*	REGENERATION	DRYING	RINSE	DISPLAY	NOTE
1	■							-	-	
2		■						-	-	
3	■							VL	5	
4			■					180"	4	R,M
5			■	■				-	-	
6			■					-	-	
7		■						P0	1	
8		■						10"	1	CP0
9	■									
10						■				
11					■					
12			■							
13			■	■						
14			■							
15		■								
16		■								
17	■									
18			■							
19		■								
20		■								
21	■									
22			■	■						
23			■		■					
24			■							
25			■		■					
26			■	■						
27						■				
28		■				■				
29		■				■				
30							■			
31		■								

8.6 Legend to all Programs (Ver F)

<P1> fixed filling time of 15 sec
CP0 fixed drain time of 20 sec, then test whether LEV 1 has switched off
P0 drains until LEV1 has switched off
VL fixed filling time of 60 sec
VLB fixed filling time of 58 sec
VLA fixed filling time of 55 sec
VLX fixed filling time of 52 sec
<VL fixed filling time of 50 sec
ARD blocking of mupltiple selection of the CPD (combined proportioning device)
P reduced pump capacity to 120 VA (all programs with half load)
PA reduced pump capacity to 120 VA (only **NORMAL** + **ECO**, AAA)
R refill algorithm active (max. 3 x 15 sec)
C tests LEV 1 before heating is switched on
M counting back of remaining wash time minute-by-minute
T total wash time of 70 min.
t=47° time to reach the temperature of 47 °C